

ABSTRACT OF THE DISCLOSURE

The isolated high-voltage LDMOS transistor according to the present invention includes a split N-well and P-well in the extended drain region. The P-well is split in the extended drain region of the N-well to form a split junction-field in the N-well. The split
5 N-well and P-well deplete the drift region, which shifts the electric field maximum into the bulk of the N-well. This achieves a higher breakdown voltage and allows the N-well to have a higher doping density. Furthermore, the LDMOS transistor according to the present invention includes a N-well embedded beneath the source diffusion region. This creates a low-impedance path for the source region, which restricts the transistor current
10 flow between the drain region and the source region.